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JOHN M. DENTON.

It is with profound regret that we record the death of our old friend and highly-esteemed colleague, Mr. John M. Denton, of London, Ontario, who was one of the early members of the Entomological Society and always took a very lively interest in its welfare. For some months he had been in poor health, owing to an affection of the liver, but was able to attend his place of business from time to time, and to take part in the proceedings of our annual meeting in November last, when many of us saw him for the last time. In January his illness assumed a more acute form and confined him to the house. On Tuesday, March 24th, he was seized with paralysis and before midnight passed peacefully away.

Mr. Denton was born in Northampton, England, on the 19th of September, 1829. His father was a farmer by occupation, and he was consequently brought up in the country amidst rural scenes and learnt there to love and observe the beauties of nature. At the age of fourteen he was apprenticed to a woollen draper and tailor, and spent seven years in thoroughly learning the trade and becoming proficient in all its details. For a few years he was engaged in business on his own account, and in 1855 married Miss Ann Walker, of Somersetshire, England, who survives him. He then emigrated to Canada and settled in London, and at once resumed his occupation as a tailor, having but little to begin upon except a hopeful heart and a thoroughly practical English training. By patient industry, unfailing courtesy, and unswerving integrity, he built up by degrees a most successful business as a merchant tailor, and won the respect and esteem of the whole community.

Living on a farm in his boyhood and apprenticed at so early an age, he had but little opportunity of acquiring a literary education, but by constant application and careful reading he overcame these disadvantages

and attained a more than ordinary knowledge of the subjects that interested him. Foremost among these was Entomology, which he studied especially in its economic aspects as affecting live stock, fruit trees, garden and field crops. He became an authority on these topics, and was frequently called upon to address meetings of farmers and fruit growers and give them the benefit of his knowledge and experience. His love of the farm continued throughout his life, and he devoted much of the time that he could spare from business to the cultivation of a fruit farm a few miles from London. He was no mean authority upon horses and cattle and had a considerable knowledge of their diseases and most satisfactory treatment. He was also an adept with the microscope and took great delight in searching into the hidden beauties of nature.

When the London branch of the Entomological Society was formed in July, 1864, he was one of the original members, and took a most active interest in it and the parent Society to the close of his life. He was elected Vice-President of the London branch in 1872, and President in 1878 and several years following. In 1871 he became a member of the Council of the parent Society and continued to hold office for five and twenty years; in 1892 he was elected Vice-President, but he would never allow himself to be nominated for the Presidency, though urged to do so more than once. He was also an active member of the Ontario Fruit Growers' Association and gave much assistance to its work.

He was a man of deep religious feelings and of earnest but unobtrusive piety. Though a leader of the Plymouth Brethren, he never intruded his views upon those who differed from him. The writer knew him well for a great number of years, and during his visits to London often enjoyed his hospitality, but never did he hear a word fall from his lips that could wound in the slightest degree the susceptibilities of those who did not accept the theological opinions that were so dear to him. He was a good, honest, sterling man whom all respected and whom his friends loved; kind, charitable, and generous; courteous in manner, most hospitable in his home, above reproach in business; a man who is a distinct loss to the city in which he lived, and whose death creates a blank in the hearts of his friends which can never in this life be filled. To his childless, sorrowing widow we tender our deepest, sincerest sympathy.

CAPTAIN J. GAMBLE GEDDES.

It is our painful duty to record the loss of another active member of the Entomological Society of Ontario. At two o'clock on Good Friday morning, April the 3rd, Captain J. Gamble Geddes died after a few days' illness, brought on by a severe cold. He was born in Montreal in 1850, and educated there. When a young man he entered the service of the Molsons Bank and was for some time attached to the office in London. He at once joined the Society and became an enthusiastic member. In 1874 he was elected Secretary-Treasurer of the London branch; in 1875, Vice-President; in 1876, President. He left London on his appointment as manager of the agency of Molsons Bank at Millbrook. Here, living in the country, he devoted most of his leisure time to the collection and study of insects, applying himself especially to the Lepidoptera. In 1880 he left the Bank and was appointed Aide-de-Camp and Private Secretary to the Hon. John Beverley Robinson, during his term of office as Lieutenant-Governor of Ontario. Being fond of society, of handsome presence and devoted to music, he became a great favourite among the social circles of Toronto, among whom much of his time was accordingly spent. He did not, however, abandon the pursuit of Entomology, but succeeded, by correspondence and exchange, in addition to the captures of his own net, in forming a large and valuable collection of butterflies from all parts of the world. This he sold to the Dominion Government, and it now forms the nucleus of the collection in the Geological Museum at Ottawa. He made expeditions in 1883 and 1884, to Manitoba and the Northwest Territories, as far as the Rocky Mountains, in quest of butterflies, and added much to the knowledge of their geographical distribution and habits. On several occasions he visited England, and spent some time in Germany and also in Bermuda. Wherever he went he made the acquaintance of the leading Entomologists and added to his stock of knowledge.

His first contribution to this magazine was in 1874, when he wrote No. 14 of a series of articles on "Some Common Insects"—"The

Common Cockchafer," C. E., Vol. VI., p. 67. His subsequent papers were the following :—

"List of Diurnal Lepidoptera collected in the Northwest Territories and the Rocky Mountains in 1883," C. E., XV., 221; XVI., 56, 224; XVII., 120; one hundred and twenty-six species were enumerated.

"Euptoieta Claudia," C. E., XVII., 60 (1885).

"Notes on Three Small Collections of Diurnal Lepidoptera, made in 1886" [These were made in Newfoundland, the Kamanistiquia River, Lake Superior, and Hudson Straits], C. E., XVIII., 204.

"Some Notes on the Genera Colias and Argynnis whilst alive in the Imago State," C. E., XIX., 166 and 230 (1887).

"Notes for Collectors visiting the Prairies and Rocky Mountains," C. E., XXI., 57 (1889).

"Colias Chione," C. E., XXI., 59.

He also contributed the following articles to the Annual Reports of the Society :—

"Some Remarkable Captures in Ontario," 18th Report, 1877, page 21.

"On Some of the Collections in England and the German Empire," 22nd Report, 1891, p. 31.

"Insects Collected in Bermuda during the Winter of 1894," 25th Report, 1894, p. 25.

In addition to his love for Entomology, he took a great interest in Philately, and formed a large and valuable collection of postage stamps. He was an accomplished musician, and usually sang in the choir of the church that he attended; he was also a member of the Philharmonic Society of Toronto. He belonged to the Masonic Order, in politics was a strong Conservative, and in religion a member of the Church of England. His wife, who was a daughter of the late Edward C. Jones, of Toronto, died a little more than a year ago. The untimely death of Capt. Geddes was no doubt hastened by her loss. They have left two little orphan girls, aged three and five years respectively.

The writer, who knew him intimately from his boyhood, deeply deplores his loss, and his grief is shared in by a very large circle of relatives and friends.

TWO NEW SPECIES OF PAPIRIUS.

BY JUSTUS WATSON FOLSOM, CAMBRIDGE, MASS.

Papirius vittatus, n. sp.

Younger specimens dark purple above with pearly markings, lavender or lilac beneath; older ones maroon to almost black above, sides mottled with several shades of purple and brown. Head free, purple, with a broad, white transverse band across the front; oral region whitish; vertex with a distinct, white, sagittate mark from antennæ to prothorax; a black ocellus-like speck on the middle of the vertex; a few short bristles upon vertex and front; eyes dark, close behind antennæ upon a black patch narrowly surrounded by purple. Antennæ longer than the body, except in largest individuals, segments variable in relative length, but approximately in the ratio of 1:6:7:1.5 or 1:7:9:2; basal segments stout, as long as broad, brownish, with short, white bristles; second brownish at base, purple at middle, pearly apically, hairy distally; third purple, hairy, with obscure, whorled subsegments on apical half, broadening towards apex, penultimate subsegment swollen on one side; terminal segment purple, lanceolate in outline with five to seven distinct, whorled subsegments. Body ovate dorsally with a re-entering angle. Dorsum dark purple to blackish, with a pattern in pearly white, essentially as follows: On anterior half of dorsum a median longitudinal purple streak between two pearly streaks with dentate margins; behind these a squarish purple spot bounded by pearly and bisected by a short, median longitudinal, pearly streak; on either side, two short, irregular, pearly lobes extending obliquely forwards; next behind on the median line are one to three roundish purple spots broadly surrounded by pearly white; on posterior of abdomen a long, oblique pearly bar directed forwards from either side of the median line. Largest abdominal segment with a small, pale tubercle on either side of the middle. Dorsum naked anteriorly, with short white bristles posteriorly. Anal tubercle with bristles four times as long, and with a median longitudinal purple bar. Sides purple to blackish, with conspicuous hazel, chestnut and cinnamon mottlings. Thorax with a broad, lateral, longitudinal pearly band, sometimes replaced by one to four bright white spots. Sides of abdomen with two to five large, conspicuous, pure white spots, widely separated. Ventral surface lilac or lavender. Ventral filaments extensible to the length of the antennæ. Legs long, purple and yellow; tibia with broad alternate bands of dark violet and wax-yellow, white bristly. Claws

white; superior claw long, tapering, rather straight, six toothed; inner edge with two prominent teeth at about equal intervals; two more on both sides near the outer edge, dividing it into thirds; inferior claw half as long as the other, straight, tapering, bearing subapically a slender bristle longer than the claw, also a tooth upon a swelling on the inner edge near the base. Furcula almost reaching the head; manubrium stout, purple; dentes twice as long, slender, pale lilac, each with long white bristles on either side, and a single, extra long ventral, subapical bristle; mucrones white, less than one-third the dentes, narrowly elliptical, ventral concavity shallow, with distinctly serrate edges, apex clearly emarginate, having a median, rounded quadrate notch between two rounded teeth.

Maximum length, 3.3 mm. Described from over fifty specimens.

This species was found abundantly in February and March of this year, in a greenhouse at Cambridge, Mass., upon wet, decaying wood, and upon the outside of alga-coated flowerpots, especially in warm, moist and shaded situations.

P. vittatus is closely allied to *P. marmoratus*, Pack. I have examined the types of the latter species which have shrivelled and lost colour, yet show distinct, structural differences from *P. vittatus*, especially in the claws and mucrones. *P. marmoratus* has a longer, oblong mucro, not emarginate, but terminating in a distinct, rounded lobe; the distal spines of the dentes are clearly barbellate; claws shorter and stouter; the superior claw has four teeth much more obscure than the six of *vittatus*: an evident tooth on the middle of the inside, a second, obscure, midway towards the apex, and a pair of small lateral teeth near the outer edge, one-third from the apex; the inferior claw has a short, apical bristle, and is less dilated basally than in *P. vittatus*.

This species is easily recognized by the broad white head band, the sagittate mark, the three median dorsal streaks, and the brilliant white spots on the sides of the abdomen.

Papirius opalinus, n. sp.

General colour orange-rufous or ferruginous. Head, first two antennal segments, anal tubercle, and legs pale orange-ochraceous. Head with a few short bristles on front; vertex almost naked, swollen dorsally; eye spots black, often quadrate. Antennae shorter than the body, from three-quarters to one-half as long, according to age; basal

segment twice as long as broad, naked; second three or four times as long, knotty, hairy towards apex; third purple, four or five times the basal, knotted, hairy except basally, obliquely dilated but squarely articulated at apex; terminal segment purple, half again the basal, lanceolate, moderately long, white, hairy. (Body regular, elongate-oval in dorsal outline; anterior dorsum naked, translucent orange-ochraceous with a broad and long median shading of green due to chlorophyll in the stomach (lateral, convulsive movements of which are easily observable in living specimens); posterior dorsum and sides orange-rufous to dark ferruginous, often with a tinge of maroon, the general colour being due to the combined effect of minute orange-ochraceous and ferruginous mottlings; posterior dorsum with short white bristles upon minute, round, orange-ochraceous spots; anal tubercle hardly visible from above, bristly. Ventral surface pale yellow, with three pairs of smooth, buff-yellow tubercles; a small, rounded tubercle on either side the manubrium; a large, oval, oblique one either side the middle; a narrow, oblique pair anterior to these; ventral tube pale orange-ochraceous, transparent, buff-yellow inside at base; tube plus protruded filaments one-fourth longer than the antennae. Legs slender; femur with sparse, short bristles; tibia paler distally, stout spiny at moderate intervals; claws white; very stout; superior claw of almost uniform width, little curved towards the mucronate apex, six toothed: inner edge with a tooth at the middle, and another midway between it and the apex; two pairs of lateral teeth, similarly placed near the outer edge; inferior claw two-thirds as long as the other, long triangular, tipped with a short bristle from a stout, straight midrib; inner edge sinuate or straight, with a short bristle one-third from base. Furcula short, reaching to ventral tube; manubrium extending beyond anal tubercle, sparsely hairy; dentes twice as long, stout, pale orange-rufous, with short, lateral bristles, and several longer, ventral bristles at regular intervals; mucrones white, one-fourth dentes in length, oblong, finely serrate beneath, apex rounded.)

Maximum length, 1.6 mm. Described from over fifty specimens.)

This species occurred abundantly with *P. vittatus* at the same time and place, feeding upon algae on the outside of flowerpots, and, curiously, having the exact colour of the latter.

Types of the above species have been given to the Museum of Comparative Zoology at Cambridge, Mass.

LEPYRUS.

BY JOHN HAMILTON, M. D., ALLEGHENY, PENN.

The species of *Lepyrus* in North America have not heretofore been well understood. The genus has recently been treated monographically by an American writer, several forms being described for the first time : one of these has since been discovered to be identical with the European *capucinus*, Schall, and *geminatus*, Say, to be *palustris*, Scop. To make these species better known is the object of the present paper, and the following synonymy and bibliography are presented :—

LEPYRUS PALUSTRIS, Scop., 1763, Entomol. Carniol., 33; *colon*, Linn., 1771, Mant., p. 531 ; Kirby, Faun. Boreal, IV., 197 ; Leconte, Mon. Rhyn., p. 127 ; *geminatus*, Say, Lec. ed., I., 273 ; *geminatus*, Casey, Ann. N. Y. Acad. Sci., VIII., 825.

In the work referred to, *colon* = *PALUSTRIS*, which to that time had been considered common to the two hemispheres, was suppressed, and the American form united with *geminatus*, the reasons being an alleged more elongate form, much larger and more transverse prothorax carinate along the middle, a carinate beak, and much sparser vestiture. The reasons assigned conclusively prove that the writer was not well acquainted with the European form as a whole, nor even with the American. Such differences do exist, but they are merely individual and apply equally well to the extremes of the individuals of either continent. Here it may be remarked that the European examples usually seen in collections rarely fairly represent the species, being mostly the largest and more conspicuous, which are the most uniform and least characteristic : that most frequently seen here being the form with a long cylindrical sub- or non-carinate beak. That the individuals of this species are very variable in Europe is evident from the number of named varieties in the catalogue, and that the same holds good here may be seen in any collection containing examples from all parts of the Continent where it inhabits. Before me are fifty examples from several localities in Europe (Italy, Austria, Switzerland, France, Portugal), exhibiting great diversity in form, size, sculpture and vestiture, but finding counterparts in the American forms before me from Massachusetts, New York, Canada, Michigan, Indiana, Wisconsin, Missouri, Kansas, Colorado (Greely, Garland), Nebraska, Manitoba (Winnipeg). The only constant characters I have yet discovered among these diversified forms are in the mesosternum, which is flat between the coxae, a little narrower and more triangular in the male than in the female; and in the tibial situation of the

femora, with a small mucro internally (sometimes not very evident). Where these characters are found, however diverse the forms, specific unity is indicated.

Before drawing comparisons, it will give better results to note the differences among the foreign forms, and for contrast, that approximating most closely the American as described by Kirby is selected for description.

Alate, surface black, clothed with gray, hair-like scales, an oblique stripe on each side of the thorax, a spot on the fourth interval of the elytra in front of middle, and a row of spots on each side of the abdomen of longer, denser white scales; the femora also annulate with white; the abdominal spots are more frequently yellow, and often the stripes on the thorax. Head densely squamulose, finely and closely punctate, a linear fovea between the eyes; antennæ with the first joint of the funicle short and thick, second longer and attenuate to base, scape attaining the eye or not, according to the length of the rostrum; beak a little longer than the thorax, cylindriform, a little dilated in front of the insertion of the antennæ, densely squamulose, finely and closely punctate, carina fine, attaining the frontal fovea or not. Thorax coniform, narrowed, more or less sinuously, from base to apex, where it is slightly constricted and about two-thirds as wide as at base, one-fourth wider than long; disk irregular, often flattened and uneven, densely punctato-rugose, varying from fine to coarse; sides coarsely tuberculo-rugose, median carina ending in the basal depression sometimes abbreviated, sometimes obsolete. Elytra three-fourths wider than thorax, about one-half longer than wide, apices mostly separately acuminate and porrect, sometimes conjointly rounded with a slight notch, serial punctures variable in size and closeness, intervals mostly even, sometimes the third, fifth and seventh wider and elevated. Femora mostly armed with a small spine; mesosternum flat, more or less triangular.

The following individual variations may be noted:—

Rostrum.—Varies from about as long as the thorax to one-fifth longer, sometimes strongly cylindrical in the longer beaked, in which the carina is weak and frequently apical; more quadrate in the shorter beaked, with the carina stronger, often attaining the fovea.

Antennæ.—In examples with short rostrum the scape reaches the eye, but not in those with it elongated.

Thorax.—One-fourth to one-fifth wider than long, sides often a little dilated at apical third; other variations are mentioned in the description.

Elytra.—The serial punctures may be large and irregularly spaced or smaller and closer; examples of the same length vary in the median width of the elytra one-sixth of the width or more; the humeral angles are usually rounded to thorax, but not infrequently full and obtusely angulate. Other variations are noted in the description.

Vestiture.—In the form described it is long, hair-like, and moderately evenly distributed over the surface; in other forms it is so short as to but imperfectly conceal the surface; in others both lengths occur; the colour varies from uniformly cinereous to uniformly yellowish-brown, the

intermediates being variously tessellated or spotted with white, brown, yellow, and gray scales irregularly intermixed; the thoracic stripes, the elytral and abdominal spots, and the spots frequently seen on the apical protuberances vary from white to yellow.

Femora.—The internal angle of the sinuation for the tibia is nearly always armed with a minute spine in all the femora, but to be seen in some examples requires close observation, and seems occasionally to be obsolete.

Contrasted with the European *palustris* as a whole the American completely harmonizes, while at the same time it is just as variable and might likewise be separated into varieties; there might be a var. *Kirbyanus*, a var. *geminatus*, etc.

The rostrum, while mostly shorter, with the scape attaining the eye, is occasionally as long as in any of the European examples; it is usually stouter, more quadrate and with a stronger carina, but these differences are not constant. The thorax in general offers few points, the most noticeable being that the median carina is usually stronger and seldom absent. The elytra while variable individually in regard to the serial punctures, form and punctuation of the elytral intervals, do not differ in these respects from what is seen in the European. The form vestiture and coloration are in no way different. The mesosternum and femoral armature are identical. These two characters with the forms of the first two joints of the funicle are very constant in every variety of both countries and the only ones yet discovered which can claim absolute specific value.

This species varies in length from .26 to .45 inch. I have taken it in Canada on the willow, and it is said to occur likewise on the aspen (*Populus*). It seems to be the species, most commonly met with; besides the places heretofore mentioned, it is reported from Louisiana and Illinois.

The question has been asked: With what species did Dr. Leconte compare *geminatus*; since *colon* has the tips of the elytra acuminate [Mon. Rync.]? I can only say that it may have been an example of *colon* with the tips conjointly rounded, which sometimes occurs; or it may have been *capucinus*, in which they are habitually rounded and which is labelled *colon* in some collections. Say's *geminatus* had a white spot on the elytra, Dr. Leconte's a yellow one. In some collections all examples with the spot white are labelled *colon*; all with it yellow

geminatus; in collections containing *capucinus*, which is not very common, that species is labelled *colon*; and all others *geminatus*, without regard to the colour of the elytral spot, and again that is labelled *geminatus* and all others *colon*.

L. *CAPUCINUS*, Schall., *alternans*, Casey.—Length, .36-.45 inch.
Habitat—Michigan, New Hampshire, Maine.

Black, apterous, form robust, vestiture variable. Rostrum stout, longer than the thorax, sulcate on each side of the carina which attains the frontal fovea or not, closely, unevenly, partly confluent punctured; scape of the antennae attaining the eye or not, the first and second joints subequal in some examples, the second much longer in others, probably sexual differences. Thorax transverse, wider than long, sides parallel to apical third, then rapidly rounding to apical constriction, apex one-fourth narrower than base; sub-convex, surface even, a slight depression in front of scutellum, closely covered with granuloid tuberculations small on the disk, larger and rugous on the sides; median carina fine, mostly attaining the base. Elytra oval, in general one-half longer than wide, two-thirds to three-fourths wider than thorax; striate, striae obscured by the vestiture, but when denuded, deep and narrow, with a row of punctures in the bottom; intervals either regular and evenly spaced or irregular with the first and third wider, the others perceptibly narrower and slightly furrowed along the middle; the granuloid tubercles vary from excessively fine to moderately coarse; apices con-jointly rounded. The anterior femora in the male have the tibial sinuation rectangularly laminate on the upper side, and usually the middle and posterior; mesosternum elevated between the coxae. The vestiture is variable, but mostly of gray and whitish elongate scales evenly intermixed, sparse, not concealing the black surface, the usual median spot on the elytra absent, but a white one on each apical protuberance, the abdominal spots wanting or only traceable in a few denser white hairs. In an example from New Hampshire the vestiture is mottled and denser, the abdominal and median elytral spots present.

In the European examples seen (all males) there are no abdominal nor median elytral spots, and the vestiture is that first described. The fuller description of the present species, with more ample material than that of Mr. Casey, has reduced the alleged differences between this and *Canadensis*, Casey, to this: Striae not distinctly punctured, *Canadensis*; striae distinctly punctured, *capucinus* (*alternans*). This seems to be too small a difference, all other things being equal, on which to base a species, especially in a genus where the individual characters are so instable.

LEPYRUS PERFORATUS, Casey.—While this species in form is similar to *palustris*, and with the same form of ornamentation, yet it is structurally different; the femoral sinuation is gradually rounded, not spinose as in *palustris*, nor angulate as in *capucinus*; the mesosternum is sub-elevated, not flat as in the former, nor so prominent as in the latter. The general vestiture is very short and sparse, not concealing the tubercular rugosities and variously tessellate with minute, denser, pale scales; the elytra and under side are covered with distant, small, polished black

tuberculoid granules, much larger on the thorax ; the intervals are slightly alternately narrower, sometimes on the same plane, sometimes the narrower deeply depressed, producing a costate appearance ; the serial punctures are large and unevenly spaced ; the apices are conjointly rounded with a slight notch. This species is fully as large as *geminellus*. The examples seen are from Vancouver Island and the high mountains of British Columbia.

Mr. Casey has described some forms which have not been seen.

L. OREGONUS, the describer states, differs from *palustris* (*geminatus*) in the more elongate form, much smaller and less transverse prothorax, longer and almost non-carinate beak, coarser serial punctures, and more prominent sutural angles of the elytra. Habitat—Oregon.

L. PINGUIS, Casey, is said to differ from *geminatus* by its more obese form, stouter beak and coarser punctuation, more exposed humeri, more declivous elytra and denser vestiture. Habitat—Colorado (Rocky Mountains).

L. ERRANS, Casey, is described from a unique taken in the mountains of New Mexico, near Abiquire, in which the elytral intervals are separated rather by striæ than by series of punctures, alternately narrower and depressed, the narrower more finely sculptured and clothed with denser brown squamules ; the elytra tessellated with patches of denser pale scales, and the usual median spot not distinguishable. The beak is longer than the thorax, with a broad and feeble carina.

L. CANADENSIS, Casey.—As stated under *capucinus*, this species should probably go into synonymy, but the form has not been seen and there may be some really specific structure not mentioned by the describer. The length is given at .44 inch, and the habitat, Canada (North-west).

L. GEMELLUS, Kirby.—This species is only mentioned to complete the genus ; it is not nearly related to any of the others ; more elongate, elytra longer with four or five broad elevated interspaces separated by striæ-like impressions, each interspace with a depressed linear furrow, roughly scalarious, lines of denser white scales on the intervals simulating vittæ ; thoracic stripes and abdominal spots white, median elytral spot absent ; mesosternum as in *perforatus*, the femoral sinuosity a little more abrupt. Length .40-.50 inch. Habitat—Vancouver Island to Hudson Bay.

Though the genus has but recently been treated monographically, after disposing of *geminatus* and *alternans*, it was thought it might be useful to state briefly the characters assigned to the other species, as in all probability the large majority of the readers of the CANADIAN ENTOMOLOGIST will never see the memoir alluded to.

The genus *Lepyrus* affords grand opportunities for the creation of species to entomologists who form them on the same basis as those of rocks and minerals.

THE MALE OF MONODONTOMERUS MONTIVAGUS, ASHM.

♂.—About $4\frac{1}{2}$ mm. long, moderately dull brassy-green (about the colour of some species of *Dolichopus*, which it superficially resembles); third abdominal segment above blackish; tips of femora, and whole of tibiae and tarsi, reddish-ochreous. Wings hyaline, veins dark brown. Antennæ black, scape greenish. Head rather finely punctate, rather broad, eyes prominent, vertex somewhat flattened. Antennæ rather short, scape very peculiar, irregularly reniform, the distal swelling largest; flagellum uniformly cylindrical, except the tip, which is transversely flattened. Thorax narrow, strongly punctate. Parapsidal grooves deep and complete. Scutellum with a transverse furrow, and its posterior margin occupied by a ridge which is foveolate above. Tegulae green. Stigma bifurcated; post-marginal vein nearly twice as long as stigmal. Posterior femora beneath very finely denticulated, with one large tooth about the beginning of its distal fifth. Abdomen narrow, shining; first segment smooth on dorsum, remaining segments finely transversely striate. Second segment extremely narrow on dorsum.

Hab.—On leaf of *Populus*, sp., campus of N. M. Agricultural College, Las Cruces, N. M., May 8, 1895. (Ckll. 2945.)

This species was described from a ♀ taken by the writer at West Cliff, Colorado. The ♂, now first described, seems to differ considerably, and I should never have referred it to the same species, but for the fact that Mr. Ashmead assures me that the identity is certain. According to Howard's synopsis of the genera of Chalcididae, it would not go into *Monodontomerus*, which has the posterior femora smooth beneath, except for the large tooth. The insect is a parasite of wild bees.

T. D. A. COCKERELL.

THE CIGAR CASE-BEARER OF THE APPLE (COLEOPHORA FLETCHERELLA).

BY JAMES FLETCHER, OTTAWA.



FIG. 12—CIGAR CASE-BEARERS AT WORK—NATURAL SIZE.
(Figure copied from Cornell Bulletin, No. 93, by M. V. Slingerland.)

In 1889 I received from the late William Brown, of Charlottetown, P. E. I., some larvae of a small case-bearer, which he had found in large numbers upon his plum trees, and which also occurred in his pear and apple orchards. Since that time this insect has made itself well-known by its injuries in apple orchards in various localities in the Maritime Provinces, and in the Provinces of Quebec and Ontario. A beautifully

illustrated and carefully prepared bulletin has been issued by Mr. M. V. Slingerland, of Cornell University Agricultural Experiment Station, in which the life history of this most interesting but very serious enemy of the fruit grower is fully described. The above illustration, kindly lent by the editor of the Canadian Horticulturist, is copied from that bulletin.

The localities in Canada where this little pest has been most injurious are situated along the northern shore of Lake Ontario and the St. Lawrence. Dr. Young, of Adolphustown, in whose orchard of Duchess of Oldenburgh and Russet apples the first important occurrence of this insect as an apple pest was observed, states that they were first noticed in his orchard about 1885. Reports of its ravages have also been received from Oshawa, Port Hope, and Maitland, Ont., in all of which places it had an appreciable effect on the yield of the orchards.

The life history may be summarized as follows: The eggs, which are described by Mr. Slingerland as beautiful objects, are of a delicate light lemon-yellow colour, deeply pitted with triangular depressions separated by narrow ridges. They are very minute, and are deposited by the females among the hairs of the new shoots and on the under sides of the youngest leaves. The egg stage lasts about two weeks, the little caterpillars emerging in the latter half of July. For the first period of their lives they are miners feeding on the inner tissues of the leaves. After two or three weeks they make small, rather flat and elongated, curved cases, in which they pass the winter. These cases, inside which they live and which they carry about with them, are made of pieces of the upper and lower skins of the mined part of the leaf, lined inside with silk. The two surfaces of the leaf are easily recognizable on the cases from the pubescence of that side which was taken from the lower surface. Soon after making these winter cases, the caterpillars, now about a quarter grown, migrate to the twigs of the tree and fasten themselves securely to the bark. In badly infested orchards they are sometimes found clustered in hundreds around the fruit spurs.

As soon as growth begins the following year, about the beginning of May, the case-bearers crawl out to the opening buds, and at this time

their injuries are considerable, as they attack not only the young leaves, but also the flower buds. The winter curved cases are retained for a short time in spring, and are enlarged by the addition of small pieces of the skin of the leaves attached to the orifice, but after two or three weeks are discarded and another kind of case is made of the same material. This summer case, from which this insect takes its name, is shaped exactly like a miniature cigar. It is brown and very tough; the upper end is contracted abruptly into a three-limbed, star-shaped orifice, the lips of which fit closely together. Through this hole the excrement of the caterpillar is ejected, and ultimately the pretty little steel-gray moth will make its exit. The full-grown caterpillars, which are orange coloured, with black heads and dark feet, four millimetres in length, change to dark brown chrysalids inside the cases about the end of June, and the moths appear about three weeks later.

REMEDIES: The Cigar Case-bearer, when numerous, is a serious pest of the apple tree, and occasionally also of the pear and plum. The most injury results from the young caterpillars early in spring attacking the unexpanded buds, and later the flower stems, the forming fruit, and the foliage.

The results of experiments show that this insect can be controlled by spraying with Paris green and kerosene emulsion; but very thorough and persistent work is necessary. The best results have followed spraying the infested trees very early in the spring with kerosene emulsion, and repeating the operation once or twice at short intervals, four or five days later. The first application may be made with the standard Riley-Hubbard emulsion reduced with only five parts of water. After the leaves expand, the emulsion should be diluted with nine parts of water. Good results have also been obtained by spraying with Paris green (Paris green, 1 lb., quicklime, 1 lb., in 200 gallons of water). Now that the operation for spraying fruit trees with different compounds for the destruction of injurious insects and fungi is getting to be generally adopted by the best fruit growers throughout Canada, the only change necessary in the advised methods will be to spray rather oftener where this insect is known to occur.

NEW AMERICAN PARASITIC CYNIPIDÆ (ALLOTRIINÆ).

BY CARL F. BAKER, FORT COLLINS, COLO.

All of the species described below were taken in Colorado. For most of the specimens I am indebted to the industry of my wife, who has done a large amount of work with the sweep net in Northern Colorado. No American species have yet been described as belonging to any of the genera mentioned, though some of the species described under *Allotria* may possibly be referable to some one of them. A number of species of *Allotria* in my collection are left until such time as the already described forms are more fully elucidated.

Phaenoglyphis, Forster.

This genus is separated from *Allotria* by the parapsidal furrows and scutellar fovea.

Phaenoglyphis americana, n. sp.

Male.—Shining black, legs and antennæ honey-yellow. Length, 1 mm. Antennæ 14-jointed, approximate at base, sockets twice as far from eyes as from each other, reaching beyond the middle of the abdomen; joint 2 as long as 1, 3 twice as long and distinctly bent inwardly, 4 and 5 somewhat shorter than 2; apical joint long, conical, and blackish at tip. Oral region castaneous. Face, prothorax above, mesonotum at sides, scutellum, metathorax and base of abdomen with fine white hair, longest on the scutellum. Parapsidal furrows distinct, not approximate behind, gently diverging anteriorly and extending the entire length of mesonotum. Scutellum with a large semicircular fovea at base. Metanotum opaque and with two longitudinal carinæ, which are equidistant from each other and the lateral margins. Tegulae piceous. Wings as long as whole body; median vein obsolete; radial cell closed, two and a-half times long as wide; appendix below long, slender, straight, and slightly knobbed at end; radius extending somewhat beyond juncture with marginal vein. Cubital and discoidal veins faintly outlined. Fort Collins; May.

Dylita, Forster.

Under this genus I describe several species in which the radial cell is open for a greater or less distance on the anterior border, and in which the radius is narrowly rounded at tip and does not reach the margin of the wing. Some of the species resemble quite closely various species of *Alloxysta*, but in that genus the radius spreads out irregularly at tip, and there is no appreciable space between it and the margin of the wing.

The following characters are common to all the species described below: Antennæ reaching to between middle and tip of abdomen. Pubescence very sparse, except on metathorax and base of abdomen, where it is short and thick, and on scutellum, where it is long and thin. Prothorax below, a triangular sclerite below tegulae, and metathorax, opaque and minutely roughened. Tegulae piceous. Wings as long or slightly longer than the whole body; median vein obsolete.

Dylita bicolor, n. sp.

Female.—Shining black, legs honey-yellow, antennæ piceous beyond joint 4. Length, 1.25 mm.

Antennæ 13-jointed, sockets at middle of face and as far from eyes as each other; flagellum becoming distinctly wider and heavier toward the tip; antennal joint 2 three-fourths the length of 1, 3 equalling 1 in length, 4 and 5 subequal in length to 2; apical joint becoming wider for about two-thirds its length, then rapidly narrowing to a point; four basal joints same colour as legs. Oral region rufous, palpi honey-yellow. Radial cell long, triangular, two and a half times as long as wide, terminal abscissa of radius broadly rounded, appendix below short, strongly bent, knobbed at tip. Fort Collins; June.

Dylita ruficeps, n. sp.

Female.—Shining black, head and antennæ beyond joint 4, dark rufous; legs honey-yellow. Length, 1.25 mm.

Antennæ 13-jointed, sockets above middle of face, nearer to each other than to the eyes; flagellum but little wider toward the tip; joint 3 somewhat longer than 1, 2 three-fourths the length of 3, 4 and 5 sub-equaling 2 in length; apical joint evenly narrowed to a point and much longer than anteapical. Mandibles honey-yellow, piceous at tips and bidentate. Palpi sordid white. Radial cell triangular, two and one-third times as long as wide, terminal abscissa of radius strongly irregularly bent, appendix below long, angularly bent at extremity. Fort Collins; June.

Differs from *bicolor* in size, colour of head, antennæ, and venation.

Dylita affinis, n. sp.

Female.—Length, 1.25 mm. Closely related to *D. ruficeps*, from which it differs as follows: Head of same width, but shorter, of a very pale bright rufous, with the space between the ocelli dark. Joint 4 of antennæ nearly as long as 3, and slightly longer than 2; sockets above middle of

face, distance between them equalling distance to eyes. Appendix below radial cell long and straight. Fort Collins ; September.

Easily separated from *ruficeps* by the above characters.

Dylita coloradensis, n. sp.

Male.—Black ; head, prothorax, and all pleuræ, pale rufous ; antennæ and legs honey-yellow. Length, 1.5 mm.

Antennæ 14-jointed, sockets above middle of face, as near eyes as each other ; flagellum not enlarging toward the tip ; joint 2 three-fourths of 1, 1 - 3 - 4 and 5 subequal ; apical joint conical and not longer than anteapical. Metanotum with two distinct carinae which converge slightly anteriorly. Radial cell triangular, little more than twice as long as thick, terminal abscissa of the radius somewhat curved, appendix below long, straight, gradually enlarged toward the extremity. Fort Collins ; June.

Readily distinguished from the above species by coloration.

Dylita similis, n. sp.

Male.—Length, 1.5 mm. Very similar to *D. coloradensis*, from which it differs as follows : Space between ocelli dark. Antennæ becoming piceous beyond joint 4. Radial cell longer and more pointed, two and one-half times as long as wide, terminal abscissa of the radius nearly straight, appendix below curved. Fort Collins ; September.

Alloxysta, Forster.

In this genus (or subgenus) the radius reaches the anterior margin of the wing, but the radial cell is open anteriorly. The following characters are common to all the species described below : Antennæ reaching to between middle and tip of abdomen, sockets at middle of face, as near eyes as each other. Pubescence very sparse, except on metathorax and base of abdomen, where it is short and thick, and on scutellum, where it is long and thin. Prothorax below, a triangular sclerite below tegulae, and metathorax, opaque and minutely roughened. Tegulae piceous. Wings as long or slightly longer than the whole body ; median vein obsolete.

Alloxysta robusta, n. sp.

Female.—Shining black, antennæ at base and legs honey-yellow. Length, 1 mm.

Antennæ 13-jointed, piceous beyond joint 4 ; flagellum strongly enlarging toward tip ; joints 1, 2 and 3 subequal in length, 4 and 5 somewhat shorter than 3 ; apical joint conical, longer than anteapical. Oral

region rufous, palpi honey-yellow. Abdomen short but very deep, the depth half again the length. Radial cell large, long triangular, length two and a half times the width, terminal abscissa of the radius gently curved, appendix below bent. Fort Collins; June.

Alloxysta longiventris, n. sp.

Female.—Shining black, antennæ at base and legs honey-yellow; head with vertex piceous, all below pale rufous. Length, 1 mm.

Antennæ 13-jointed, dark rufous beyond joint 4; flagellum strongly enlarged toward tip; proportions of antennal joints as in *robusta*. Metanotum with two longitudinal carinæ which converge slightly anteriorly. Abdomen nearly as long as the thorax, slender, upper and lower lines subparallel. Radial cell small, short triangular, length two and a third times the width, terminal abscissa of the radius strongly curved, appendix below straight. Fort Collins; May.

In the form of the abdomen this species differs widely from any other Allotriid I have seen. The abdomen of *A. robusta* differs from the normal form in exactly the opposite direction.

Alloxysta magna, n. sp.

Female.—Large, robust; shining black; antennæ at base and legs honey-yellow; head rufous, slightly darker above. Length, 1.6 mm.

Antennæ 13-jointed, piceous beyond the fourth joint; flagellum subfiliform, scarcely enlarging toward the tip; joints 1, 3 and 4 subequal, 2 about three-fourths as long, apical joint conical at tip, longer than the antepical. Metanotum with two longitudinal carinæ which converge slightly anteriorly. Abdomen globular, as deep as long, and scarcely pointed behind. Radial cell large, triangular, length two and a half times the width, terminal abscissa of the radius strongly curved, appendix below short and straight. Fort Collins; June.

The largest species I have seen, and with the abdomen more nearly globose.

Alloxysta gracilis, n. sp.

Female.—Shining black, antennæ at base and legs honey-yellow; head pale rufous. Length, 1.25 mm.

Antennæ 13-jointed, piceous beyond joint 4; flagellum subfiliform; joint 3 equals one in length, 2 three-fourths as long, 4 and 5 somewhat shorter. Abdomen from the side subtriangular, strongly pointed behind. Radial cell of medium size, two and a half times as long as wide, terminal

abscissa slightly curved, appendix below heavy and straight. Fort Collins ; September.

Differs from *magna* in size, shape of abdomen, etc.

Alloxysta apicalis, n. sp.

Female.—Shining black, antennæ at base and legs honey-yellow, head pale rufous ; abdomen light reddish-brown, black at tip. Length, 1.4 mm.

Antennæ 13-jointed, piceous beyond joint 4 ; flagellum slightly heavier toward the tip ; joints 1, 3 and 4 subequal, 2 a little shorter ; apical joint conical at the tip, longer than the anteapical. Abdomen from the side subtriangular, pointed behind. Radial cell large, two and a half times as long as wide, terminal abscissa slightly curved, appendix below slender, strongly knobbed at the tip. Fort Collins ; September.

Readily recognized by the peculiarly coloured abdomen.

Alloxysta rufipleura, n. sp.

Male.—Shining black, antennæ at base and legs honey-yellow ; head, prothorax, and all pleura bright rufous. Length, 1.25 mm.

Antennæ 14-jointed, dusky beyond joint 5 ; flagellum subfiliform ; joints 1, 3 and 4 subequal, 2 a little shorter, 3 somewhat swollen at the apex beneath ; apical joint conical, little longer than anteapical. Abdomen from side subequilaterally triangular, strongly produced and pointed below. Radial cell of medium size, two and one-half times as long as wide, terminal abscissa of the radius strongly curved, appendix below rather long and emarginate on the proximal side. Fort Collins ; June.

Separated from all the above species by the partially rufous thorax.

Alloxysta abdominalis, n. sp.

Female.—Dark shining piceous, abdomen and thorax lighter ; head and metathorax rufous ; antennæ at base and legs honey-yellow. Length, 1 mm.

Antennæ 13-jointed, piceous beyond joint 4 ; flagellum slightly enlarged toward the tip ; joints 3 and 4 shorter than 1 and but little longer than 2 ; apical joint slender, conical, very long, a half longer than the anteapical. Abdomen from the side subequilaterally triangular. Radial cell shorter and broader than in *rufipleura*, the terminal abscissa of radius gently curved, appendix below slender, curved, knobbed at tip. Fort Collins ; June.

Resembling *rufipleura*, but differing in size, and antennal and wing characters. It is hardly possible that this could be the female of *rufipleura*.

NOTES ON BEES OF THE GENUS PROSOPIS, WITH
DESCRIPTIONS OF NEW SPECIES.

BY CHARLES ROBERTSON, CARLINVILLE, ILLINOIS.

Prosopis affinis, Sm.

Twenty-four male and female specimens sent to Mr. Cresson in 1887 were identified as this species. Since that time I have regarded it as a variable species, and in my last paper (*Trans. Am. Ent. Soc.*, XXII., 116) indicated it as a synonym of *P. modesta*, Say. I now think there are two species, closely allied, but characterized as follows:—

Prosopis affinis, Sm., ♀.—Black, head and thorax opaque, closely punctured; abdomen almost impunctate, first segment smooth and shining, lateral apical margin with a patch of whitish pubescence; flagellum testaceous beneath; subtriangular mark on each side of face, two spots on collar, tubercles, spot on tegulae, edge of wing base beyond tegulae, and base of all the tibiae, lemon-yellow; enclosure of metathorax strongly rugose at base; wings hyaline. Length, 5–6 mm.

♂.—Resembles the female; first segment of abdomen less shining, more punctate, apical margins of segments subtestaceous and subfasciate; face below antennae, ascending broadly on each side nearly to summit of scape and notched around insertion of antennae, labrum, mandibles, except rufous tips, concave exterior edge of scape, two spots on collar, spot on tegulae, edge of wing base, tubercles, tarsi, and tibiae, except a spot behind anterior and middle pairs and ring on posterior pair, lemon-yellow. Length, 5–6 mm.

Illinois; 16 ♂, 11 ♀ specimens.

Four males differ only in having no yellow on scape; one of these also without a spot on tegulae.

I think there is no question but that this is the *P. affinis* of Smith, but the male described by him probably does not belong to it. If, however, this should prove to be distinct from *P. affinis*, the name of *Prosopis ziziae* is proposed for it.

Prosopis modesta, Say, ♀.—Closely resembles the female of *P. affinis*; wing a little more dusky, the extreme base without yellow, tegulae rarely with a small spot in front. Length, 4–6 mm.

♂.—Scape stout, not strongly concave exteriorly, as in preceding; first segment of abdomen less punctate, more smooth and shining; face below antennae, narrowing to a point on each side at eye margin; two

spots on collar, tubercles, anterior tibiae in front, middle and posterior pairs at base, and the tarsi, yellow; the tarsi paler. Length, 5-6 mm.

Illinois; 24 ♂, 27 ♀ specimens.

Thirteen male specimens agree with the description; six have a yellow line on mandibles; five have a yellow spot on labrum; three have no spots on collar; two have spots on tegulae, and one has the scape yellow exteriorly. Twenty-two female specimens have the tegulae immaculate; five have small spots on tegulae in front, two individuals of these showing the spot only on one side. This is the commonest species in my neighbourhood. I have taken the sexes in copula. This is the *P. affinis* of Cresson (Proc. Bost. Nat. Hist., xii., 270).

Smith mentions a spot on tegulae in *P. affinis*, while Say does not mention it in *P. modesta*. It is quite probable that Say's description was based on specimens taken in Indiana. This is the only species taken here which agrees with his description. What Say described as the male belongs to *P. pygmaea*, Cr. The female of *P. pygmaea* usually has a spot on tegulae, but not on collar.

Prosopis pygmaea, Cress.

Of twenty-seven female specimens taken here (Carlinville, Illinois), all except nine show a spot on clypeus, two showing three spots; only one shows no spot on the tegulae; all have spots on tubercles and side of face, and no spots on collar. The females without spots on face and tubercles are referred to next. (See Trans., XXII., 116.) Of twenty-three males, fourteen have no spots on tegulae, while two show no spots on tubercles and are without the yellow club-shaped extension of the facial markings.

Prosopis saniculae, n. sp., ♂.—Black, opaque, the abdomen more shining; head and thorax closely and rather finely punctured; abdomen almost impunctate; enclosure of metathorax more rugose than in *P. pygmaea*; form slender; scape very broad, club-shaped; flagellum beneath and apical margins of abdominal segments somewhat testaceous; a subquadrate spot on clypeus, a smaller spot above, a narrow line on each side of face, anterior tibiae in front, middle and hind pairs at base, and the tarsi, yellow; face on each side near insertion of antennae with a rounded depression which is smooth and shining; wings hyaline, nervures and stigma dull testaceous. Length, 4-5 mm.

♀.—A narrow line on each side of face, sometimes wanting, and the tibiæ at base, yellowish. Length, 4-5 mm.

Illinois; four ♂, three ♀ specimens.

Prosopis Illinoiensis, n. sp., ♂.—Black, head and thorax opaque, densely, rather strongly and coarsely punctured; abdomen shining, especially the first segment, which is impunctate, the remaining segments finely punctured; metathorax rather strongly rugose; scape stout; face below antennæ, widening above on each side and somewhat notched about their bases, small spot on labrum, and sometimes on mandibles, two spots on collar, tubercles, anterior and middle tibiæ in front, hind tibiæ entirely, and the tarsi, yellow; wings dusky toward tips. Length, 6 mm.

Illinois; three ♂ specimens.

NOTES ON NEW MEXICO AND ARIZONA HYMENOPTERA.

BY C. H. TYLER TOWNSEND, LAS CRUCES, N. MEX.

(Continued from page 112.)

Diodontus occidentalis, Fox.—Las Cruces, N. Mex. Name com. by Prof. Cockerell. Det., Fox.

Diadasia enavata, Cress.—Las Cruces, N. Mex., August 19. Two. Clypeus black. Det., Fox.

Elis (Dielis) plumipes, Drury.—Las Cruces, N. Mex., August 19. Two. Det., Riley.

Epeorus, sp.—Chaves, N. Mex., August 6. One. A moderately large hornet-shaped species, most beautifully velvety all over, entirely black below, including legs. Thorax black, with circular border light velvety yellow extending on pleura. Abdomen black with light velvety yellow cross-band on segments 1 to 4, those on segments 1 and 2 on hind portion near hind border and projected laterally forward, on first segment the lateral yellow also projected inward on anterior edge. Wings smoky. There seems to be very short pubescence on the thorax, but that on the abdomen is extra short, or is, as it appears, pollen. Det., Fox.

Epeorus occidentalis, Cress.—Turkey Tanks, Arizona, July 18. One specimen. A small hornet-shaped species, with thorax black and yellow vittate, abdomen black and yellow banded, wings slightly smoky, and legs fulvous. Det., Fox.

Eucerceris, sp.—Grant, Valencia County, N. Mex., August 3. One. A yellow and black chrysidiid-like hornet. Det., Riley.

Evania, sp., ♂.—Las Cruces, N. Mex., September 9. One. A small blackish and rufous gall-fly (?), with immense thorax and very small pedunculate abdomen. Det., Riley.

Gorytes dentatus, Fox., n. sp.—Grand Canyon, Arizona; Hance trail, July 11. One specimen. A small rufous and yellow hornet. Wings hyaline, anterior pair brownish near tip. Det., Fox.

Halictus ligatus, Say.—Hart Little Spring, Arizona, July 14. One specimen. A small blackish bee. Det., Fox.

Hedychrum violaceum, Brullé.—Chaves (near Los Lunas), N. Mex., August 6. One. El Rito, N. Mex., August 5. One. Det., Fox.

Ichneumon comes, Cress.—San Francisco Mt., Arizona, July 15. One specimen. A black ichneumonid with two yellow bands on abdomen at base, and fulvous-yellow legs. Det., Fox.

Megachile, sp.—Chaves (near Los Lunas), N. Mex., August 6. One specimen. A moderately large species, mostly black; nearest to following species, but with more elongate abdomen, and slightly stouter. Det., Fox.

Megachile, sp.—Las Cruces, N. Mex. One. Clypeus black. ♀. Chaves, N. Mex., August 6. One. Det., Fox.

Megachile relativa, Cress., ♀.—Hart Little Spring, Arizona, July 14. One specimen. A grayish pilose bee, pile of abdomen fulvous and in bands, rest of abdomen showing shining black. Det., Fox.

Megacilissa gloria, Fox.—El Rito, N. Mex., August 5. One specimen. Large species, fulvous-yellow pilose, including first abdominal segment, rest of abdomen black with white pilose narrow hind borders to segments 2 to 4. Wings clear. This was a new species, recently described by Mr. Fox.

Megacilissa Yarrowi, Cr.—Las Cruces, N. Mex., August 21. One. A large yellowish-fulvous pilose bee, with dorsum black except last abdominal segment. Front wings black, except bases. Det., Fox.

Melecta interrupta, Cress.—La Vega de San José, N. Mex., Aug. 4. One. Continental Divide, Tenaja, N. Mex., August 2. One. Det., Fox.

Mellisodes, n. sp.—El Rito, N. Mex., August 5. One ♀. Much like *M. obliqua*, Say, ♀, but larger and more yellowish-fulvous pilose on abdomen and especially on thorax. Wings clear. Det., Fox.

Mellisodes menuacha, Cress., ♀.—Las Cruces, N. Mex. One ♀. Det., Fox.

Mellisodes montana, Cress., ♀.—Las Cruces, N. Mex., August 19. One. A species of moderate size, fulvous pilose, including basal abdomi-

nal segment, rest of abdomen black with pale yellowish pubescent bands on segments. Wings clear. Det., Fox.

Mellisodes obliqua, Say, ♀.—Las Cruces, N. Mex. One. Clypeus black. Det., Fox.

Nomia, n. sp.—La Vega de San José, Valencia County, N. Mex., August 4. One. Det., Fox.

Nototrachys texanus, Cress., ♀.—Continental Divide, Tenaja, N. Mex., August 2. One. A small, dark rufous ichneumonid. Det., Riley.

Odynerus, sp.—Las Cruces, N. Mex. A specimen caught in the act of extracting one of the mesquite tineid bag worms from its case [for description of this tineid see *Zoe*, IV., pp. 226-228]. A small black and yellow hornet. Det., Riley.

Odynerus, sp., near *annulatus*, Say.—Grand Canyon, Arizona. Hance trail, July 11. Two specimens. Det., Fox.

Osmia, n. sp.—Las Cruces, N. Mex. One ♀. A small species, with dark green abdomen. Thorax black, dark fulvous pilose above. Wings slightly smoky. Det., Fox.

Pelopaeus Servillei, St. Farg.—El Rito, N. Mex., August 5. One. Turkey Tanks, Arizona, July 18. One. Det., Fox.

Pepsis formosus, Say, ♂.—Grand Canyon, July 11. Only one specimen. This is the smaller black form with blue reflections, and with brownish-yellow wings, which are blue at base. Many have been taken at Las Cruces, N. Mex. Det., Fox.

Perdita, sp.—Las Cruces, N. Mex. Name com. by Prof. Cockerell. Det., Fox.

Philanthus, sp.—Hart Little Spring, July 14. One. A good-sized black ichneumonid with red abdomen. Det., Fox. (?) *.

Pompilus, sp. (new to U. S. Nat. Mus. Coll.)—La Vega de San José, N. Mex., August 4. One. A small purplish-black wasp. Det., Riley.

Pompilus aethiops, Cress.—La Vega de San José, N. Mex., Aug. 4. One. A wasp of a soft black colour with a faintly purplish tinge. Det., Riley.

Pompilus formosus, Say.—Las Cruces, N. Mex. Common August 21 and other dates. Four large ones measure from 4 to 4½ cm. long.

Ptenus, sp.—La Vega de San José, N. Mex., August 4. One. A sawfly. Det., Riley.

Scolia dubia, Say.—La Vega de San José, N. Mex., August 4. Two. Det., Riley.

Scolia haematodes, Burm.—La Vega de San José, N. Mex., August 4. Five specimens. This is a large black species, with apical two-thirds of abdomen yellowish-orange. Wings purplish-blue. The extra-melanic colours of the bristly pile vary from yellowish or dull orange to deep crimson. Det., Riley.

Scolia Lecontei, Cress.—La Vega de San José, N. Mex., August 4. Four. Det., Riley.

Smicra, sp.—Grand Canyon, Arizona; Hance trial. Three specimens. July 8 and 11. Det., Fox.

Sphaerophthalma, sp., ♂.—Zuni River, Arizona, July 28. One. This winged specimen has the thorax and last two-thirds of abdomen yellowish or slightly orange pilose, the rest being wholly black. Det., Riley.

Sphaerophthalma texana, Blake, ♂.—Continental Divide, Tenaja, N. Mex., August 2. One. Chaves, N. Mex., August 6. One. Det., Riley.

Sphaerophthalma coccineohirta, Blake, ♀.—Carrizo, Arizona, July 22. One. This mutillid differs strikingly from the forms more ordinarily met with, by having the dorsum not alone of abdomen, but also of thorax and head, with crimson-red hair. Det., Riley.

Sphaerophthalma creusa, Cress.—Las Cruces, N. Mex. Name com. by Prof. Cockerell. Det., Fox.

Sphaerophthalma gloriosa, Sauss., ♀.—Grant County, N. Mex. [W. J. Howard, 1882]. One specimen. This peculiar mutillid is clothed on whole dorsum with grayish-white long hair. Det., Riley.

Sphaerophthalma gorgon, Blake, ♀.—Las Cruces, N. Mex. Three specimens. This is a large mutillid, all black, except dorsum of abdomen with orange-yellow hair. A larger ♀ specimen, taken in St. Joe, Arizona, July 21, has the hair of abdomen crimson-red, except base of abdomen, which with all the rest bears black hair. It is identified as same species. Det., Riley.

Sphaerophthalma occidentalis, Linn., ♂.—Zuni River, Arizona, July 28. One. Continental Divide, Tenaja, N. Mex., August 2. One. Det., Riley.

Sphecius speciosus, var. *grandis*, Say.—Las Cruces, N. Mex. One. Large species, colours yellow, rufous, and dark brown. Det., Riley.

Sphex, sp.—Las Cruces, N. Mex. One. A large black wasp, with orange-yellow legs and abdomen. Det., Riley.

Sphex ichneumonea, Linn.—La Vega de San José, N. Mex., Aug. 4. One. El Rito, N. Mex., August 5. One. Det., Riley.

Tachytes fulviventris, Cress.—Chaves, N. Mex., August 6. One. Sabinal, N. Mex., August 7. One. First three abdominal segments of this specimen clear, light orange, and other two segments black. Det., Fox.

Tenthredo flavomarginis, Norton.—San Francisco Mt., Arizona, July 15. One specimen. Blackish sawfly. Very nearly the same as *T. xanthus* and *occidentalis*, but without bands across the abdomen, which is wholly black. Det., Fox.

Tenthredo occidentalis, Cress.—Hart Little Spring, Arizona, July 14. Eight specimens. Like *T. xanthus*, only the abdominal bands are red instead of yellow. Det., Fox.

Tenthredo xanthus, Norton.—Hart Little Spring, Arizona, July 14. Two specimens. This is a black species with two pure yellow bands across the abdomen. Det., Fox.

Thyredon arnatiipennis.—Grand Canyon, Arizona. Hance trail, up near rim, July 12. One specimen. A very large ichneumonid, with laterally compressed and petiolate abdomen. Mostly flavous. Thorax stout. Antennæ long, yellow. Wings flavous-hyaline, with extremities and posterior border black. Det., Fox.

Trypoxylon Texense, Sans.—La Vega de San José, N. Mex., Aug. 4. Three specimens. Det., Fox.

Urocerus abdominalis, Harris.—Summit of San Francisco Mountain, Arizona. Nearly 13,000 feet. Many specimens seen, three captured July 15. The abdominal segments 2 to 5 of this species are bright yellow. rest of body wholly soft black. Eyes and legs partly yellowish. Det., Fox.

Vespa occidentalis, Cress., var.—Hart Little Spring, Arizona, July 14. One collected. Many seen. A large yellow and black hornet. Det., Fox.

Xylocopa Arizonensis, Cress.—Las Cruces, N. Mex., August 19. One. Det., Fox.

NOTE.—Mention was inadvertently omitted, in the introductory remarks, of a paper on ants from Las Cruces, N. M., sent to *Entom. News* (1894) for publication, and which records twelve species.

